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ABSTRACT

Findings of a study that explored ways of designing elementary-level instruction for disadvantaged students are presented in this paper, with a focus on the impact of the educational environment on instructional practices. The study sought to identify the current range of instructional practices and demonstrate their potential applications to disadvantaged learners. Rather than assuming a deficit view of such students, alternative instructional models focus on the knowledge, skills, and abilities that all students possess. Fifteen high-poverty elementary schools with good performances on standardized tests were studied during the 1989-90 and 1990-91 school years. A total of 85 first-, third-, and fifth-grade teachers and their students were studied in the first year, and 68 of the classrooms were examined in the followup study. Approximately 1,800 students were included. Methodology also involved interviews with staff, principals, and teachers; analyses of daily teacher logs and student test data; classroom observations; and administration of teacher questionnaires. The alternative instructional approaches identified were not primarily linked to higher-achieving or more affluent student populations, or to better prepared, more satisfied teachers. However, state and district policy and school factors appeared to create distinct classroom types. Policy influenced classroom instruction through curriculum guidelines, textbook adoption, and testing. Teacher support is necessary when adopting alternative instructional practices. Eight tables are included. (Contains 27 references.) (LMI)

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QUALITY SCHOOLING FOR DISADVANTAGED STUDENTS: ENVIRONMENTAL INFLUENCES ON INSTRUCTION

FINDINGS FROM THE STUDY OF ACADEMIC INSTRUCTION FOR DISADVANTAGED STUDENTS

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QUALITY SCHOOLING FOR DISADVANTAGED STUDENTS: ENVIRONMENTAL INFLUENCES ON INSTRUCTION

by Christine Padilla

Introduction

Efforts to systematically change the way we run our schools has driven many of the changes initiated by policymakers and spurred many areas of new research in the last decade. Reform initiatives have targeted increasing standards for students and teachers, building the capacity of teachers and principals, and the content and practice of teaching. Our research approach was to study these reform initiatives in schools serving large numbers of "disadvantaged" students, i.e., those from low-income backgrounds and at greatest risk of academic failure. Our premise is that these children are capable of more than educators typically expect of them; that every child will learn if he or she is presented with the right opportunity to do so. Recent research suggests that academically challenging learning experiences can be offered to the students who are at a disadvantage in today's schools and who are disproportionately from poor families and from ethnic and linguistic minority backgrounds.

Much research is currently directed at the connection between content, process, and school structure to effect higher achievement for at-risk students and students in general (e.g., National Center for School Leadership, Accelerated Schools). This paper will focus on the environment in which instruction takes place--attributes of teachers, the school structure, district and state policies--that influence changes in instructional practices, based on results from the Study of Academic Instruction for Disadvantaged Students conducted by SRI International.

Background of the Study

To date, the most widely accepted conception of what and how to teach disadvantaged students emphasizes curricula that proceeds in a linear fashion from the basics to advanced skills, instruction that is tightly controlled by the teacher, a uniform approach to classroom management, and ability grouping that often becomes permanent tracks at an early age. The conventional wisdom can work well when skillfully applied, especially when the goal is improving student performance on relatively simple academic tasks found on many standardized achievement tests. Such approaches, though, have important limits. They can create an unintended ceiling on the learning of the children they are designed to serve by not developing their analytical or conceptual skills or by failing to provide larger meaning or purpose for learning (Allington, 1991: Resnick, Bill, Lesgold, & Lear, 1991).

The Study of Academic Instruction for Disadvantaged Students, conducted by SRI International under contract to the U.S. Department of Education, was intended to contribute to the search for feasible improvements on the "conventional wisdom." The goal was to find better ways of designing elementary-level instruction for disadvantaged students by documenting more precisely the range of practices now in place and demonstrating what is possible (Knapp & Shields, 1991).

The study has attempted to identify the content and instructional approaches that best impart both "the basics" in literacy and mathematics, and what are generally referred to as "advanced skills" (what we have termed alternative models of instruction). Instead of taking a deficit view of the disadvantaged learner, alternative models of instruction focus on the knowledge, skills, and abilities that all children possess; a curricula and instructional methods that build on prior learning and complement rather than contradict the child's experiences outside of school (Means & Knapp, 1991). The alternatives to conventional practice are consistent with views of curriculum and instruction that have gained acceptance among experts in mathematics, reading, and writing, as well as research in cognitive science (for a review see, Means, Chelemer, & Knapp, 1991). Alternative models of instruction have the following emphases:

- Mathematics--more work on understanding and applications, with broader coverage of mathematics topics; less work on computation and less redundancy across grades.

- Reading--more reading for meaning from the earliest grades (and correspondingly less attention to discrete skills taught out of context); exposure to a wide variety of text, including material that connects with students' backgrounds and experiences.

- Writing--more meaningful written communication and less attention to mastery of writing mechanics in isolation; introduction to various genres and the processes of writing from the earliest years in school.

Typical instructional practice in the schools we studied included characteristics of conventionally accepted approaches, with alternatives described above. Instructional strategies clustered in ways that permitted us to distinguish classrooms in terms of the way curriculum and instruction was approached in each subject area (i.e., different configurations of content, method, and learning experience). Table 1 summarizes our typologies of classrooms, by subject area.* None of the models presented represent a single approach to instruction, but rather, an increasing departure from one approach to another. Despite the adoption of alternative instructional approaches by many teachers in our sample, none of our teachers was willing to totally opt for one form of instruction over another. Nearly all believe that a variety of instructional strategies should be employed because children, regardless of their social status, do not all learn in the same way.

Although our research primarily focused on illustrating the range of current elementary classroom practice and demonstrating what can be done at this level, one of the research questions addressed in the study involved the combination of factors in the school, district, and state that support the introduction of promising instructional approaches. Therefore, our classroom-level research also tried to identify the links between effective classroom practice and the environment surrounding the classroom (i.e., the ways in which the policies, norms, and support mechanisms of the schools and districts impacted classroom instruction). The data from our

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* For a more in-depth discussion of these typologies, see Knapp et al., 1992.

Table 1

INSTRUCTIONAL APPROACHES IN SAMPLE CLASSROOMS[a]

Patterns of Mathematics Instruction

- Type 1: Classrooms that focus on arithmetic with skill building as the primary goal (most conventional).
- Type 2: Classrooms that focus on arithmetic with the goal of building conceptual understanding along with skills.
- Type 3: Classrooms that focus on multiple mathematical topics, with a "skills only" orientation.
- Type 4: Classrooms that focus on multiple mathematical topics with attention to conceptual understanding as well as skills (most alternative).

Patterns of Reading Instruction

- Type 1: Classrooms in which the teacher placed little or no emphasis on strategies aimed at understanding, preferring to concentrate instead on conventional teaching of basic reading skills.
- Type 2: Classrooms featuring moderate use of the strategies aimed at understanding, interspersed with basic skills teaching.
- Type 3: Classrooms in which teachers made extensive use of the strategies aimed at understanding, often in combination with various forms of skill teaching.

Patterns of Writing Instruction

- Type 1: Classrooms with little or not extended text writing. In these classrooms, writing-related instruction was almost entirely devoted to the teaching of language mechanics.
- Type 2: Classrooms offering a moderate amount of extended text writing. Here, opportunities for writing text appeared periodically, often in the form of regular journal writing, but generally without a great deal of explicit instruction related to improving writing.
- Type 3: Classrooms providing extensive opportunities for extended text writing, and along with it, exposure to associated forms of instruction noted above.

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[a] Each typology represents an increasing departure from conventionally accepted instructional approaches.

study show striking consistency in the kinds of explanations that emerged across subject areas (Knapp et al., 1992). In this paper I will discuss some of the more important elements in shaping curriculum and instruction found through our research: (1) the teachers themselves (their professional preparation, levels of commitment, and beliefs about what they are teaching) and (2) the school, district, and state policy environments within which they operate (curriculum policies, textbook choices, testing and accountability pressures, district and school support). The resulting impact on short-term student outcomes will also be explored.

The Sample

The locations of the schools in our sample varied. They cut across three states, different metropolitan settings (urban, suburban, and rural), and six districts. The district and schools contexts also varied: at different stages in the reform process, leadership style, school size, longevity and cohesiveness of the staff. On the other hand, sample schools did have one characteristic in common: we selected schools that, during the year before data collection began, were performing well on conventional standardized tests compared to other schools serving a similar student population.

Classrooms located in 15 high-poverty elementary schools were studied intensively for a two-year period (the 1989-90 and 1990-91 school years). Our case study sample comprised a set of classrooms taught by teachers of varying instructional philosophies that ran the gamut between conventional and alternative wisdom instruction. During the 1989-90 school year, 85 teachers in grades 1, 3 and 5 participated in the study. A large number of students from these classrooms were followed the next school year into grades 2, 4 and 6. Outcome data on approximately 1,800 students were collected for both years. Table 2 summarizes information regarding the sample.

Table 3 illustrates how student characteristics grouped by instructional approach. The data indicate that the differences, if any, among the classroom types on student variables are not especially large, suggesting that alternative instructional approaches represented in our typologies are

Table 2

THE STUDY SAMPLE BY DISTRICT
AND CLASSROOM CHARACTERISTICS

District Characteristics	Year 1	Year 2
1. Number of districts	6	6
2. Metropolitan status		
- Urban	3	3
- Suburban	1	1
- Rural	2	2
3. Number of schools	15	15

Classroom Characteristics	Average of Classroom Measures Year 1 (n=85)	Year 2 (n=68)
1. Level of economic disadvantagement (average % of students in the classroom on free or reduced price lunch program)	65%	61%
2. Participation in supplemental programs (average % of students served by)		
- Chapter 1	42%	20%
- Other programs	12%	18%
3. Average class size[a]	23 students	26 students
4. Percentage nonwhite students	69%	73%

[a] This figure reflects the fact that some "classes" which we studied were in fact a subset of a larger homeroom group due to teaming, departmental, or cross-graded arrangements.

Table 3

STUDENT CHARACTERISTICS BY
TYPE OF INSTRUCTIONAL APPROACH

Type of Instructional Approach	Poverty Level (Percentage Free or Reduced Lunch) (Year 1)	(Year 2)	Initial[a] Achievement Level (Year 1)	(Year 2)
Mathematics				
• Arithmetic, skills only (Type 1)	65% (29)[b]	55% (27)	41 NCEs (20)	45 NCEs (8)
• Arithmetic, skills and concepts (Type 2)	69 (27)	65 (26)	39 (21)	45 (12)
• Multiple topics, skills only (Type 3)	65 (33)	61 (26)	42 (19)	45 (14)
• Multiple topics, skills and concepts (Type 4)	54 (32)	64 (28)	50 (21)	50 (9)
Reading				
• Little or no emphasis on understanding (Type 1)	64% (25)	60% (19)	47 NCEs (18)	40 NCEs (10)
• Moderate emphasis on understanding (Type 2)	70 (30)	61 (25)	37 (19)	45 (9)
• Great emphasis on understanding (Type 3)	49 (34)	64 (30)	43 (28)	43 (11)
Writing				
• Little or not extended writing (Type 1)	62% (28)	60% (24)	44 NCEs (9)	43 NCEs (7)
• Moderate amount of extended writing (Type 2)	72 (31)	62 (26)	46 (8)	46 (9)
• Great deal of extended writing (Type 3)	56 (31)	62 (25)	46 (10)	45 (8)

[a] Initial achievement level was measured by Fall pretest scores on the CTBS/4.

[b] Standard deviations are shown in parentheses.

not linked primarily with higher-achieving students or a more affluent student population.

Though not a proportionate sample of all elementary schools nationwide that serve high concentrations of poor children, the sample was sufficiently large and varied to enable the study to accomplish three goals: (1) document the range of practices and curricula offered to poor children in typical and high-performing elementary classrooms and schools, (2) describe effective academic instruction found in high-performing classrooms and schools, and (3) identify conditions in schools and districts that are associated with effective academic instruction.

Data Sources

A variety of data sources were employed in this study: (1) interviews with district staff, principals, classroom teachers, and special program staff (e.g., special education teachers, Chapter 1 coordinators, bilingual specialists); (2) daily teacher logs completed by classroom teachers; (3) site visitor observations of classroom instruction summarized in case study narratives and standardized coding forms; (4) teacher questionnaires; and (5) student test data.

The analyses presented in this paper draws heavily on the qualitative case reports from intensively studied classrooms (77) and quantitative indicators from the full sample of classrooms (153).

Attributes of the Classroom Teacher

The skill level of a teacher, their satisfaction level, the expectations they hold for their students, and beliefs about what they are teaching can have a strong influence on what is taught in the classroom. Embarking on new forms of instruction presents many challenges to teachers, which tests self-confidence in their teaching ability and their willingness to make mistakes. The amount of resources provided to teachers can influence the rate at which new instructional strategies take hold--lack of time,

resources, and training for teachers to learn new instructional approaches are significant barriers to change. Therefore, we inquired into teachers' professional development opportunities (e.g., degree work, inservice activities, participation in professional associations), their satisfaction with teaching, their familiarity with students' backgrounds, as well as their expectations for student success, to explore the relationship between these factors and the impact on teachers' instructional choices and student outcomes.

Teacher Skill Level

There was some evidence that teachers who embarked on curricula and instructional approaches at variance with conventional wisdom were more likely to have had advanced training and to have had access to a wide range of professional development opportunities. Alternative instructional practices were achieved by combining skills acquired through years of experience teaching, with the pursuit of appropriate training. Time in the classroom gave teachers an opportunity to practice their skills and develop self-confidence, while professional development opportunities provided them the tools to master new instructional approaches. On the other hand, the relationship between alternative instruction and the extent of professional development was not consistent across subject areas in both years (see Table 4). For example, in our Year 2 sample, teachers that were moving towards more alternative forms of mathematics instruction (Types 2 and 3) had the highest proportion of advanced degrees, but not necessarily the highest level of subject-level professional development during their teaching career.

The number of advanced degrees and involvement in professional development activities provides only a rudimentary picture of teacher expertise. One must also take into account (1) when training was acquired (i.e., in the present or when "basic skills" instruction was the norm), (2) the purpose behind the training (e.g., to fulfill requirements for pay increases versus expanding ones instructional repertoire), (3) the teachers' philosophy of education (i.e., notions regarding how a subject should be taught to students), and (4) the quality of the training. Few of the teachers in the study sample were offered a high level of inservice training

Table 4

RELATIONSHIP BETWEEN TYPE OF INSTRUCTIONAL APPROACH AND TEACHERS' EXPERTISE OR EXPERIENCE

Type of Instructional Approach	Teacher Characteristics		
	Highest Degree: Percentage with M.A.'s (Year 2 Only)	Extent of Subject-Related Professional Development: Index[a] from 1 (= Least) to 6 (= Most)	
		Year 1	Year 2
Mathematics			
• Arithmetic, skills only (Type 1)	21%	1.9 (1.1)[b]	4.3 (1.3)
• Arithmetic, skills and concepts (Type 2)	53	2.3 (.8)	3.9 (1.5)
• Multiple topics, skills only (Type 3)	50	2.3 (1.2)	4.7 (1.8)
• Multiple topics, skills and concepts (Type 4)	25	3.4 (1.2)	3.6 (1.5)
Reading			
• Little or no emphasis on understanding (Type 1)	26%	2.5 (1.1)	4.1 (1.2)
• Moderate emphasis on understanding (Type 2)	38	2.6 (1.1)	4.3 (1.4)
• Great emphasis on understanding (Type 3)	31	2.8 (1.2)	4.4 (1.0)
Writing			
• Little or no extended writing (Type 1)	50%	2.0 (1.0)	3.7 (1.3)
• Moderate amount of extended writing (Type 2)	25	2.7 (1.2)	4.1 (1.5)
• Great deal of extended writing (Type 3)	23	2.2 (.9)	4.8 (.9)

[a] Index indicates the extent of inservice, preservice, and other professional development related to language arts or mathematics. Index in Year 1 is based on observer's rating, in Year 2 on teacher self-report.

[b] Standard deviations are shown in parentheses.

to master alternative instructional approaches, even when these new approaches were mandated by the district (it was often at the point of implementation that district resources fell short due to declining education budgets).

Philip Schlechty in his book Schools for the 21st Century: Leadership Imperatives for Educational Reform (1991) argues convincingly that "human resource development is the linchpin upon which all improvement efforts are based"--the development of people and the creation of an environment in which people feel supported when they try and fail. More and more business leaders are learning that instituting reforms is hard work. Unlike businesses that are undergoing restructuring efforts, educators invest little in training and support for those they expect to sustain change (teachers, principals, and school staff generally). Furthermore, what little is invested (the human resource budget for most school systems is substantially less than 1%) is too often spent on forms of training aimed at improving things at the margins rather than developmental programs aimed at causing teachers and administrators to think differently about their work and work differently because of what they come to think. It takes much more than a few training sessions, some stipends, and a speaker or two to bring about change.

For those teachers experimenting with the most alternative forms of instruction, we found that pedagogical training was also often combined with a willingness to take risks. Change involves risks because it requires people to give up habits and comfortable practices. While risk taking can be strongly influenced by individual personality, it can also be cultivated by creating an accepting atmosphere that does not punish sound experimentation. In most cases, in our sample of classrooms, this turned out to be a supportive principal. Giving teachers the tools to be independent thinkers, though, can create numerous deviations from prescribed curricula that tests the flexibility of school administrators to deal with external pressures (i.e., from the district office).

For a school to attempt a serious reformulation of goals or instructional practices, the principal must be open to change, and eager to take risks also. They need to have an attitude that it's better to try

something and fail, than never try anything new at all. Research on school leadership has shown that principals that adopt a "leadership orientation" will achieve the greatest success in a rapidly changing environment predicated by activities such as restructuring and reform. That is, principals that nurture common commitments by eliciting full participation and intense engagement from the staff, and develop creative approaches to the educational process during continual adjustment and change (Mitchell, 1990). Equally important though is the provision of training and support that gives teachers confidence that they have the skill to do what is expected of them.

As mentioned previously, the teachers in our sample could not be considered advocates of one particular approach to instruction. Many were willing to try new instructional strategies, but maintained a healthy skepticism until a new approach to instruction had proven itself. They tended to have an eclectic style that continually evolved, sometimes at odds with district guidelines. Their conceptions of a subject area and beliefs about how it should be taught had much to do with what transpired in their classrooms. Therefore, the degree to which instructional practices coincided with each teachers conceptions and beliefs, influenced the degree to which they were adopted. One of the teachers at odds with elements of the district's new integrated language arts curriculum illustrates how teachers can adapt alternative instructional practices to their beliefs about instruction, in this case, facilitated by the support of a principal.

> Pat is recognized as a strong teacher by her principal and peers. She has confidence in her teaching abilities and is willing to take risks in the classroom. Pat, a 16 year veteran, has taken total control of the way she teaches the content in her classes, letting the district dictate only the comprehension skills to be covered in reading. In reading and language instruction, she refuses to use the district-adopted literary anthology textbook because she believes that literary works ought to be read in their entirety. She also believes that children develop a great sense of pride as they read entire books: "For some children, this will be the first time they have ever read a whole book." All of the skills outlined by the district language arts curriculum are covered as she works through study guides on each chapter of the novels. She is currently a member of a committee to change the district language arts curriculum. Her principal has supported her wholeheartedly in her approach to the language arts curriculum because of her expertise and leadership in instructional areas, going so far as to purchase sets of trade books for her classroom and recommending Pat for district membership on textbook selection committees.

Teacher Expectations and Knowledge of Students

Research also points to the importance of holding high expectations for students and challenging their abilities in order to enhance their performance (e.g., Brophy, 1983; Ames & Archer, 1988). But the standard used by a teacher in defining "high expectation" for success can be influenced by the degree of challenge offered by the curricula presented in class--doing well on basic skills is different than doing well on tasks that require conceptual understanding. Therefore, we were interested in comparing the expectations held by teachers pursuing alternative forms of instruction with teachers pursuing other forms of instruction and the impact on student outcomes.

Mrs. Brown provides an example of the expectations maintained by teachers in our sample:

> Mrs. Brown holds high expectations for her students even though the students she has in her class run the gamut in terms of background: "I will not lower my standards because of any student's background. Students will rise to meet what I expect, and I expect much. If I did not, they would lower their performance to move down to the low standards I set." On occasion, however, she has one or two students who simply cannot succeed on all tasks and she provides different opportunities for these students to succeed: "I know they learn a great deal from listening. It has taken me a long time to admit that, just because a student can't write about what he or she knows or show me on a test, the student can still have learned a great deal about what we are studying." Unfortunately, these students may not be able to demonstrate what they have learned on standardized tests.

The outcomes presented in Table 5 are based on rough indicators derived from teachers' questionnaire responses. The indices include (1) a ranking of expectations for academic success for the current years' classroom of students, (2) a count of different ways that teachers have become familiar with students' backgrounds (e.g., making home visits, having regular communication with parents), (3) the average number of years teaching in schools serving large numbers of disadvantaged students, and (4) the combined mean score of satisfaction with school support and teaching as a career. The data indicate that the type of instructional strategies used in a classroom were not necessarily a function of teacher expectations, knowledge of student backgrounds, or satisfaction with teaching. They were also not a function of

Table 5

RELATIONSHIP BETWEEN INSTRUCTIONAL APPROACH AND TEACHERS' EXPECTATIONS, KNOWLEDGE OF STUDENTS, OR SATISFACTION WITH TEACHING
(Year 2 Data)

Type of Instructional Approach	Teachers' Expectations[a] for Student Success: Scale from 1 (= Most Can't Succeed) to 4 (= All Can Succeed at Grade Level)	Teachers' Familiarity with Students' Backgrounds: Index from 1 (= Least) to 7 (= Most)	Years of Experience Teaching These Kinds of Students	Teachers' Satisfaction with Teaching Scale from 1 (= Least Satisfied) to 4 (= Most Satisfied)
Mathematics				
• Arithmetic, skills only (Type 1)	3.2 (.8)[b]	1.7 (.8)	5.5 yrs (5.3)	3.1 (.8)
• Arithmetic, skills and concepts (Type 2)	3.2 (.7)	2.4 (1.4)	14.7 yrs (9.2)	3.2 (.8)
• Multiple topics, skills only (Type 3)	3.4 (.7)	1.5 (.9)	8.1 yrs (6.3)	3.2 (.4)
• Multiple topics, skills and concepts (Type 4)	3.2 (.6)	2.2 (1.3)	9.7 yrs (7.8)	3.2 (.7)
Reading				
• Little or no emphasis on understanding (Type 1)	3.0 (.7)	2.3 (1.5)	9.4 yrs (8.9)	3.2 (.7)
• Moderate emphasis on understanding (Type 2)	3.2 (.5)	1.6 (.8)	8.9 yrs (7.2)	3.5 (.5)
• Great emphasis on understanding (Type 3)	3.2 (.8)	2.2 (1.3)	10.6 yrs (8.7)	3.2 (1.0)
Writing				
• Little or no extended writing (Type 1)	4.2 (.6)	1.8 (1.1)	8.7 yrs (8.5)	3.3 (.9)
• Moderate amount of extended writing (Type 2)	4.4 (.5)	1.8 (1.1)	9.2 yrs (6.0)	3.5 (.5)
• Great deal of extended writing (Type 3)	4.1 (.5)	2.4 (1.2)	10.4 yrs (8.5)	2.8 (.9)

[a] Based on teachers' self report.

[b] Standard deviations are shown in parentheses.

the students they teach since classrooms were fairly comparable in terms of initial achievement level and poverty level (as illustrated in Table 3).

Teachers who were engaged in the most alternative approaches to mathematics and writing instruction (Types 4 and 3 respectively) have a somewhat higher self-reported familiarity with students' backgrounds than teachers adopting the most conventional approaches (Type 1); this is not the case in reading. Teachers who engaged in the most alternative approaches to reading and writing had, on average, only slightly greater years of experience teaching in schools serving large numbers of disadvantaged students than those pursing the most conventional approaches in reading and writing instruction; teachers pursuing the most alternative approaches to mathematics instruction have a little more than twice the years of experience of those favoring the most conventional approach. But what teachers do with their awareness of student backgrounds seems to make the biggest difference in their instructional style--those who adopt alternative instructional approaches are more likely to draw on students' backgrounds as a resource for learning which provide opportunities to use what they already know in the process of developing and refining academic skills and, thereby, increasing the relevancy of instruction (Knapp et al., 1992). Teaching discrete skills, on the other hand, offers less opportunities for connecting with anything children know from their past experiences.

Results of a multiple regression analysis, summarized in Table 6, exploring the relationship between teacher characteristics (level of preparation, expectations, and satisfaction) and short-term (fall-to-spring) student outcomes show inconsistent results when other factors are taken into account (i.e., student characteristics and instructional strategies). While teacher characteristics do not appear to play a clear role in distinguishing higher- and lower-performing classrooms in our sample, our results do suggest that the richness of a teacher's background and expectations for student success can contribute to increased student achievement in some instances (i.e., mathematics and writing assessments).

Table 6 represents the effect attributable to teacher characteristics adjusted for preexisting differences in student achievement or poverty level

Table 6

RELATIONSHIP BETWEEN INDEPENDENT VARIABLES
AND SHORT-TERM STUDENT OUTCOMES

	B-weights in multiple regression equations predicting mathematics scores--			
	Mathematics Concepts and Applications Scores in Spring of:		Math Superitems Scores in Spring of:	
Independent Variables	Year 1[a]	Year 2[b]	Year 1[a]	Year 2[b]
Controls				
• Poverty level of classroom	-0.1***	-0.1***	-0.1**	-0.02
• Initial student achievement level	0.7***	0.6***	0.4***	0.5***
Teacher Characteristics				
• Richness of teacher's background in math	0.0	1.4***	0.3	0.9*
• Expectations for student success	1.1	-0.1	1.9*	-0.8
• Satisfaction with teaching	0.8	-1.1	0.2	-0.3
Focus of Mathematics Instruction[c]				
• Arithmetic and conceptual understanding (Type 2)	-0.5	0.1	6.3***	1.7
• Multiple topics; skills only (Type 3)	1.7	2.3	6.3***	-1.2
• Multiple topics and conceptual understanding (Type 4)	6.0*	2.4*	5.8***	1.5

* = $p < .05$ ** = $p < .01$ *** = $p < .001$

[a] Grades 1, 3, and 5 in Year 1; grades 2, 4, and 6 in Year 2.

[b] Grades 3 and 5 in Year 1; grades 4 and 6 in Year 2.

[c] By comparison with students in arithmetic-skills-only classrooms (Type 1).

Table 6 (Continued)

RELATIONSHIP BETWEEN INDEPENDENT VARIABLES AND SHORT-TERM STUDENT OUTCOMES

Independent Variables	B-weights in multiple regression equations predicting CTBS 4/ reading comprehension scores-- Year 1: Grades 1, 3, and 5 (n = 1,068)	Year 2: Grades 2, 4, and 6 (n = 991)
Controls		
• Poverty level of classroom	-0.1***	-0.1***
• Initial student achievement level	0.6***	0.7***
Teacher Variables		
• Richness of background in language arts	-0.1	0.6
• Expectations for student success	1.0	0.6
• Satisfaction with teaching	-0.4	1.2
Emphasis on Strategies Aimed at Maximizing Understanding[a]		
• Moderate (Type 2)	4.0***	3.8***
• High (Type 3)	5.5***	0.9*

*** = $p < .001$

[a] By comparison with students in classrooms placing little or no emphasis on these strategies (Type 1).

Table 6 (Concluded)

RELATIONSHIP BETWEEN INDEPENDENT VARIABLES AND SHORT-TERM STUDENT OUTCOMES

Independent Variables	B-weights in multiple regression equations predicting overall writing competence scores-- Year 1 Fall-Spring (n = 679)	Year 2 Fall-Spring (n = 592)
Controls		
• Poverty level of classroom	-0.00	-0.01***
• Initial student (reading) achievement level	0.03***	0.03***
Teacher Characteristics		
• Richness of background in language arts	-0.01	0.03
• Expectations for student success	0.00	-0.16*
• Satisfaction with teaching	0.15*	0.16**
Emphasis on Extended Text Writing[a]		
• Moderate (Type 2)	0.02	0.03
• High (Type 3)	0.12	0.14

* = $p < .05$ ** = $p < .01$ *** = $p < .001$

[a] By comparison with students in classrooms placing little or no emphasis on extended text writing (Type 1). Data represent the mean estimated gain in within-grade Z-scores.

and the instructional approach used by teachers. Table 6 illustrates the anticipated increase in student test scores measured in Normal Curve Equivalents (NCEs) in mathematics, reading comprehension, and writing competence based on each point on the indices measuring teacher characteristics. For example, for each point on the teacher expectation scale, students scored approximately 1.9 NCEs above the mean on the Math Superitems test* administered in Year 1 of the study (grades 3 and 5). Satisfaction with teaching is also positively associated with students' scores on writing competence during both years of data collection.

The general lack of clear association between teacher characteristics and outcomes in this study may be due to the fact that the range of variation on these variables in our sample of teachers is not great because of our purposive sampling criteria (i.e., we were looking for schools that were doing a better than expected job), our small sample size, or the limitations of our measuring devices. It should be noted that while the children of poverty and minority children are increasingly located in central city schools, which have the worst teacher shortages and, subsequently, the most under qualified new hires (Oakes, 1987), most of the teachers in our sample were relatively satisfied (e.g., 66% were very satisfied with teaching as a career), well trained, and had moderately high expectations for their students.

As expected, students' initial achievement and poverty level are significantly associated with outcomes, i.e., less affluent students and those who start the year with less proficiency in a subject tend to score less well, on average. Initial achievement level was measured by Fall

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* A test consisting of "mathematical problem-solving superitems" developed by the University of Wisconsin, Center for Research on Mathematics Education, (Romberg, 1982). These items pose unfamiliar problems to students and then ask questions at varying levels of difficulty about the problems in an open-ended, rather than multiple-choice format. For analyses, we used the percentage of correct items, because there is no way to create a norm-based score comparable to NCEs.

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pretest scores on the CTBS/4.* Poverty level is indicated by the percentage of children in each class participating in the Free or Reduced-Price Lunch program.

With regard to instructional strategies, short-term outcomes (fall-spring) do show positive associations between instructional approach and student performance:

- Students show greatest gains in conceptual understanding as well as the ability to solve problems in classrooms that depart the most from arithmetic skills as the sole focus for mathematics instruction (Type 4 classrooms).
- Student gains in reading comprehension are most pronounced in classrooms that place the highest emphasis on strategies aimed at reading for understanding (Type 3 classrooms), although moderate exposure to strategies emphasizing understanding (Type 2 classrooms) also appear to increase scores more than for students with little exposure (Type 1 classrooms), with gains replicated across both years.

The evidence is mixed and inconclusive regarding the effects of particular strategies across a 12-month period of time; our findings across a 12-month period are seriously hampered by attrition biases resulting from the loss of half or more of the Year 1 students from the Year 2 sample.

Despite the modest effects we have identified, it would be a mistake to attribute too much influence over the outcomes of instruction to the instructional strategies and teacher characteristics alone. The instructional strategies are linked to and often dependent upon other things happening in the school and district that support specific kinds of instruction--in particular, an adequate amount of time for instruction, appropriate support for teachers, and curricular decisions that place a priority on the kinds of outcomes that we were testing. These kinds of influences will be explored next.

Despite these qualifications, the message of the study's findings is clear: for the lowest-achieving children in the student population we have

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* The Comprehensive Test of Basic Skills (CTBS)/Level 4 produced by CTB Macmillan/McGraw-Hill. For analyses, we converted the raw score into NCEs.

been studying, alternative instructional approaches work at least as well as they do for the highest-achieving ones. Some teachers are able to find ways to improve the analytical and conceptual skills of a population of students that are often assumed to be unable to handle even the "basics."

The School Environment or Culture

Literature on effective schools (e.g., Purkey and Smith, 1983; Edmonds, 1979 and 1982; Good and Weinstein, 1986) and school leadership (e.g., Maehr, 1990) emphasizes the importance of a schools' culture or ethos in fostering academic success. The complex interactions of this social system, just as in other kinds of organizations, is a critical element in determining its working and learning environment. The culture of a school is a combination of values, norms, beliefs, and expectations expressed by the leadership and staff (e.g., school climate, expectations for students, faculty collaboration, shared mission). Teachers and administrative staff can and do influence student motivation and achievement patterns through school-wide policies, procedures, and activities that focus student effort on learning goals--the "motivational character" of schools.

Our research also shows that there are a number of forces within the school that encourage or discourage teachers from adopting particular approaches to curriculum and instruction. The school environment is powerful both as a stimulus to alternative instructional approaches and as an inhibiting factor. The strongest principals offered both a clear sense of direction to teachers and acted as a buffer against external pressures to teach something else, but the degree of autonomy and support afforded to teachers varied remarkably. We also found that peer support can both encourage and discourage departures from conventional wisdom.

As Table 7 indicates, schools in our sample differed tremendously, both within and across districts, in the percentage of sample classrooms that emphasized meaning and understanding in mathematics, reading, and writing instruction. Take, for example, the two schools in District 1. Both had nearly identical profiles of classroom types in reading and writing, yet were

Table 7

CLUSTERING OF ALTERNATIVE AND CONVENTIONAL INSTRUCTIONAL APPROACHES WITHIN SCHOOLS AND DISTRICTS
(Year 1 and 2 Data Combined)

School (n of classrooms)	Among sample classrooms within the school, the percentage with instruction most (and least) oriented toward meaning and understanding.[a]		
	Mathematics	Reading	Writing
District 1: State 1	41% (23%)	45% (9%)	60% (13%)
• School 1 (n = 11)	73 (0)	45 (9)	57 (14)
• School 2 (n = 11)	9 (45)	45 (9)	63 (13)
District 2: State 1	13 (50)	11 (28)	42 (17)
• School 3 (n = 11)	22 (44)	18 (9)	57 (28)
• School 4 (n = 7)	0 (57)	0 (56)	20 (20)
District 3: State 1	48 (20)	17 (43)	50 (10)
• School 5 (n = 8)	75 (0)	40 (50)	75 (0)
• School 6 (n = 6)	25 (25)	0 (50)	0 (0)
• School 7 (n = 9)	44 (33)	0 (33)	40 (20)
District 4: State 2	32 (32)	12 (20)	6 (33)
• School 8 (n = 10)	30 (40)	20 (10)	0 (33)
• School 9 (n = 8)	13 (38)	0 (38)	17 (33)
• School 10 (n = 9)	50 (20)	14 (14)	0 (50)
District 5: State 3	3 (55)	0 (72)	9 (61)
• School 11 (n = 11)	0 (64)	0 (91)	0 (71)
• School 12 (n = 11)	9 (18)	0 (55)	0 (63)
• School 13 (n = 11)	0 (82)	0 (70)	25 (50)
District 6: State 3	25 (38)	56 (13)	25 (0)
• School 14 (n = 8)	13 (38)	56 (11)	25 (0)
• School 15 (n = 8)	38 (38)	57 (14)	25 (0)

[a] "Approaches most oriented toward meaning and understanding" = (1) for mathematics, focus on multiple topics, with emphasis on conceptual understanding; (2) for reading, great emphasis on strategies that maximize comprehension; and (3) for writing, extensive opportunities for extended text writing.

nearly opposite with regard to mathematics (73% of the classrooms in School 1 displayed the most alternative approaches to mathematics, while only 9% of those in School 2 did so). Teachers in School 1 were provided the assistance of a math specialist who made himself available to all teachers on a regular basis to discuss their teaching of mathematics, respond to their concerns and questions, and also to push them to incorporate problem-solving strategies into their teaching. Some schools concentrated on particular subject areas, and teachers' approaches to curriculum and instruction followed suit (e.g., the principal in School 3 makes writing instruction a high priority and hence a large proportion of teachers putting a great deal of emphasis on extended writing, School 10 has a mathematics and science magnet program and a disproportionately high percentage of teachers teaching multiple mathematical topics with an emphasis on conceptual understanding). Other school-level influences were more difficult to pinpoint.

Not all of the differences among schools can be attributed to policies and conditions unique to the school. As the data in the table suggest, district- and state-level policies lead schools within the same district to resemble each other. But at the same time, schools sometimes clearly played a role in fostering certain approaches to instruction that was independent of the district's and state's influence.

Principal Leadership

Both district and school leaders have under their control management decisions that can influence the learning environment--deciding how students are to be grouped, which students to recognize and on what basis, whether to encourage competition or cooperation, if and how autonomy is to be encouraged, methods for evaluating performance, and a host of other policies and procedures. Leaders that choose to inaugurate policies that affect how children perceive learning can have a positive impact on students' motivation and achievement. Research on school leadership suggests that the goals stressed by a school (e.g., academic accomplishment, recognition for achievement, competition, perceived sense of community) appear to be differentially important at different stages and of varying importance to children of different ethnic backgrounds (Maehr, 1990).

The leadership role played by the principals at our sample of schools was, therefore, an important element in our assessment of the instructional environment. Our research supports the contention that even the best teachers can be oppressed by a bad school. In order for a school to work together toward goals, there must be a psychological environment supportive of teamwork, achievement, and learning for its own sake. And for change to be sustained, it is essential that those in positions of authority actively support, as opposed to passively tolerate, the change. Good leaders motivate others to work toward the goals of the organization, which in the case of schools, includes instructional practices (Mitchell, 1990). Some of the activities undertaken by effective school leaders in our sample of schools and supported by other research (e.g., Cohen, 1986; Cuban, 1988; Eubanks and Levine, 1988; National Center for School Leadership, 1991) that can influence instruction and outcomes, include the following:

- Providing information and supporting teachers' needs for curriculum planning and development.
- Working to ensure a good fit between curriculum objectives and achievement testing.
- Encouraging teachers to try new ideas, praising and recognizing them for a job well done, and asking parents and students to do the same.
- Reinforcing high expectations for academic achievement, and establishing and enforcing clear guidelines for policies and practices.

Our staff survey data indicate that teachers adopting different approaches to mathematics, reading, and writing appeared to have comparable levels of satisfaction with school support for instruction. On the other hand, the schools were not the same in the way they supported particular approaches to instruction, especially through the actions of the principal. How the principal views their role as instructional leader (e.g., facilitator versus authoritarian) can support or be at odds with particular instructional approaches. For example, stressing strict adherence to textbooks or encouraging teachers to think creatively about academic tasks. A safe and orderly environment for learning can become a stifling one if school leaders focus on controlling behavior by developing school-wide rules to control students and teachers versus giving them more choice, initiative, and responsibility.

Teachers opting for instruction aimed at meaning and understanding perceived themselves to have greater autonomy over curricular and instructional decisions than those who pursued instruction dominated by the mastery of basic skills. We found that individuals who took on new approaches to instruction were more likely to find ways to be creative regardless of constraints imposed upon them. But it was also clear that school leaders could enhance or inhibit these tendencies by the way they treat their staffs.

Two of the principals in our sample illustrate how leadership style can influence the psychological environment of a school and the resulting impact on instructional practices.

> Grant School is characterized by stable leadership, a committed and experienced staff, and a very positive learning environment. The principal is clearly the political and administrative leader of the school, but governs through mutual respect and a real "can do" attitude that has encouraged school staff to take on numerous challenges throughout the years. The principal views her role as that of facilitator; if teachers set a goal, her job is to get the resources together to help them achieve that goal. The result is a high caliber teaching staff that exerts a lot of control over curricular decisions and one with a large proportion of teachers experimenting with alternative forms of instruction. Despite state and district guidelines, the principal feels she has a lot of flexibility to implement new instructional programs or practices.
>
> Basic skills proficiency is a major priority for the principal at Monroe Elementary School. The principal has staved off any attempts by the district to impose the new district-mandated curricula in reading that employs a whole language approach. When the administration tried to enforce use of its mandated language arts text, the principal threatened to sue pointing to the school's high test scores. There are many attributes that make this school a good place to work--there are small pupil-teacher ratios, full-time aides, an abundance of materials, and plenty of time for planning and collaboration. Unfortunately, these outcomes have come at the price of teacher autonomy. Teachers often feel quite oppressed by what they see as overbearing leadership and an emphasis on test scores and, therefore, engage in instructional practices that differ from the wishes of the principal at high-cost to their teaching career.

In observing two schools in the same district implementing a new language arts curriculum, it was quite evident how the instructional leadership provided by the principal clearly affected the attitudes of teachers as they adapted to the new curriculum--alternative instruction was

taking hold in both schools, but there was much more uncertainty and ambivalence in one. The principal at one of these schools has provided additional inservice sessions to staff on the new curriculum, has formalized opportunities for teachers to help one another, and also encourages staff to experiment with new instructional techniques. The sense of a shared mission has fostered a positive approach to taking on the new curricula. Another principal in this same district has provided her staff with little instructional support and does not encourage staff to seek outside support. The result is a feeling of uncertainty among staff about how well they are teaching the new curriculum and teacher morale that ranks lower than the district average.

Schools are not alone in their need for a leader who understands that the best way to get others to perform is to believe in them and give them support, training, and opportunities to try. The difficulty is that, as Philip Schlechty (1991) points out, in schools more than in most organizations, creative leadership is often discouraged at the top as well as the bottom.

Peer Interaction

In addition to the tone set by the principal, the climate of a school is influenced by the degree of cohesiveness and "chemistry" among its collection of teachers. The schools we studied varied tremendously in this respect. In schools with the most internally supportive environment, teachers were more likely to approach instruction with an emphasis on meaning and understanding. Elsewhere, individual teachers might make the choice to teach in a way that was at odds with conventional approaches, but did so more out of personal conviction (Knapp et al., 1992).

In a variety of informal ways, the teachers in our sample used their colleagues as a source of advice, materials, troubleshooting, and curricular direction. Occasionally, the relationship was formalized, as in the case of teacher teaming. One way of encouraging teachers to experiment and be creative is to form instructional teams that provide a forum for support and comparison of experiences. Having the principal as part of the team

encourages risk-taking because there is less pressure and restrictions; if something doesn't work, teachers can try something else. The positive influence of instructional teams to alter and improve what teachers do in the classroom is illustrated by the following example:

> A goal of the principal at Grady School is on developing grade-level teams that work together to provide instructional support and leadership to one another. The use of grade-level teaming promotes consistency of instruction for both language arts and mathematics, and there are also articulation meetings to provide continuity across grades. The open space and design of the buildings (i.e., teachers at the same grade level are housed in the same building) facilitates sharing among team members. Several teachers are selected as key planners, and work with the principal in setting goals and the direction of the school. Staff are eager to keep on top of new instructional practices and much of the school's budget is spent on inservice. The quality of the staff is evidenced by the number of former or current mentor teachers (8) at the school and the number of teachers experimenting with alternative instructional strategies.

Of course, peer interaction can support a climate for change or maintain the status quo. An illustration of teacher empowerment "gone amuck" is described below.

> The control exerted by the long-time teachers at Briarwood Elementary School has stifled attempts at instructional change. The informal power base established by several teachers who have taught in the school for many years (some 25-30 years) has set the tone of the school, the curriculum, and discipline policies. A first year teacher reported that this group of teachers stresses component skills language arts instruction, often out of the context of the students' reading and writing because they believe students must be well grounded in basic skills. While the new literature-based language arts textbook is used, it is supplemented by grammar textbooks. All teachers in the school are advised to follow this group's philosophy of teaching and feel pressure to conform due to criticism from fellow teachers. Those who don't conform usually transfer to another school.

The evidence that the talents, interests, and other qualities possessed by the teachers who happen to be in a school are an important element of the instructional environment of a school is hard to ignore. Our data indicate that some of the schools we studied were much more effective than others at attracting and retaining a group of teachers who were likely to experiment with alternative instructional approaches.

The District Context for Instruction

Even though the school acts as a filter for external forces, the school does not control events in the district and state policy environment that may be closely linked to the kind of instruction taking place in classrooms. Districts and states influence curriculum directly through choices about instructional goals, textbooks, and criteria for assessment. On the other hand, most externally imposed or top-down initiatives (such as district mandates), without attention to the support provided for change, do little to affect the broader school culture and organization (Kirst & Meister, 1985). In many reform efforts, teachers and administrators are often not prepared for the new roles asked of them. Districts, therefore, must also provide leadership and support for school-level change. Without this broader context of support, even if schools are able to improve, they are not able to sustain the improvement (David, 1989; Schlechty, 1991).

Although there were many factors at all levels contributing to instructional choices, the net result of district policies are suggested by the patterns in Table 8. As was true of the school environment, district policies can act as constraints, limiting the vision or the resources of principals and teachers. For example, some districts actively discouraged or simply did not encourage alternative approaches to instruction (e.g., all subjects in District 5). In other cases, they present opportunities to try practices believed to be more effective (even if only to satisfy a mandate), encourage experimentation, or provide other kinds of help. Take for example, alternative approaches to reading instruction in District 6 or all subject areas in District 1. Our data also indicate that teachers' use of a mathematics curriculum focusing on a broad array of topics occurred only in districts in which there was some encouragement, or an explicit mandate, for this to happen (often, but not always, originating at the state level). Virtually no teachers in the sample adopted such a curriculum in the absence of some strong urging from above; few would have opted for such a curriculum without such leadership (Knapp et al., 1992).

Teachers' feelings of control over what was taught in their classroom were strongly influenced by the adoption of a new curriculum and the degree

Table 8

DISTRIBUTION OF CLASSROOMS BY TYPE OF INSTRUCTION WITHIN DISTRICTS AND STATES
(Year 1 and 2 Data Combined)

Percentage[a] of sample classrooms within each district exhibiting each type of instructional approach--

District and state	Mathematics Instruction				Reading Instruction			Writing Instruction		
	Type 1	Type 2	Type 3	Type 4	Type 1	Type 2	Type 3	Type 1	Type 2	Type 3
State 1 (n of classrooms)	(n=15)	(n=16)	(n=8)	(n=23)	(n=17)	(n=29)	(n=17)	(n=11)	(n=24)	(n=28)
District 1 (Rural)	24%	29%	10%	38%	9%	45%	45%	18%	32%	50%
District 2 (Urban)	33	44	11	11	28	56	17	22	39	39
District 3 (Urban)	17	9	17	57	43	39	17	13	43	43
State 2	(n=11)	(n=4)	(n=3)	(n=9)	(n=3)	(n=17)	(n=5)	(n=9)	(n=12)	(n=4)
District 4 (Urban)	41%	15%	11%	33%	12%	68%	20%	36%	48%	16%
State 3	(n=21)	(n=18)	(n=4)	(n=5)	(n=24)	(n=15)	(n=9)	(n=20)	(n=18)	(n=7)
District 5 (Suburban)	59%	19%	13%	9%	72%	28%	0%	61%	29%	10%
District 6 (Rural)	13	75	0	13	6	38	56	7	64	29

[a] Total may not equal 100% due to rounding errors.

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of control exerted by the district, and ultimately upheld by the principal. Of those teachers who felt some limitation in what they could teach, the factors identified most often as limiting discretion included state frameworks/guidelines (73%), district syllabi (68%), state or district tests (64%), and district textbook adoptions (53%). Below we describe these forces that help to explain the distribution of classroom types across districts.

Curriculum Guidelines

As mentioned previously, several districts in our sample (some supported by the state) had set about changing instructional practices in reading and math through the development of new curriculum guidelines. However, there are important differences in the degree to which curriculum policies prescribe exactly what is to be taught, the sequence in which it is taught, and even the timing in the school year. A consequence of the more prescriptive curricular policies appears to be a higher degree of fragmentation in the curriculum, which makes it harder for certain alternatives to take hold. This was especially evident in the teaching of language arts. Some of the districts and schools in the study had devised a curriculum that either tries to do too much or subdivides what children must learn into too many discrete areas. The result is the same, i.e., fragmentation of the school day into a series of unrelated segments. In some classrooms, no activity ever lasts more than 10 minutes which eliminates the possibility for any extended reading nor writing of extended test. In other classrooms, the daily and weekly reading instruction schedule is quixotic because so many other social and curricular goals have been inserted into a finite amount of time--drug education, counseling, supplemental instruction, assemblies, etc. (Knapp et al., 1992).

The experiences of teachers in one of our school districts illustrates some of the consequences of forcing teachers to strictly adhere to curricular policies (e.g., this district had the highest percentage of sample classrooms with little or no emphasis on understanding in reading instruction).

> Teachers in the Erwin School District are guided by a curriculum developed by the administration and are expected to strictly adhere to it throughout the school year: "The district curriculum is the final word" commented one classroom teacher. The district has essentially

tried to "teacher proof" the curriculum. Two new teachers at one of these schools who were trained in the concepts of emergent literacy, found it very difficult to maintain a balance between whole language instruction and district guidelines. One of these teachers stated that she found the curriculum guidelines so demanding that she felt that she was not afforded the time needed to devote to whole language instruction. Therefore, despite her convictions that a focus on literacy was the best way to teach at-risk students, she was forced to take a more traditional approach.

Although the adoption of curriculum guidelines has gotten teachers to consider instructional alternatives, guidelines alone were not able to sustain change. Other forces at the school level such as principal support and individual preferences were also exerting their influence. We also found many cases in which the kind of support offered to teachers by the district (or the lack of it) had a key role in shaping academic instruction in the classroom. For example, the mandating of new instructional strategies with little or no training versus having the resources to provide teachers with a good deal of inservice or other instructional support to increase their comfort level with new materials and approaches.

How a curricular policy comes to be established and with what kind of participation from teachers, schools, and the central office is also an important element in the implementation of instructional practices. Research has demonstrated quite clearly that teacher "ownership" of an innovation (or policy) improves its chances of being implemented. The experiences of the districts in our sample that are in the process of implementing a change to more integration of reading, writing, and other aspects of language arts or greater problem-solving in mathematics instruction corroborate this finding. In several of our districts, the commitment of teachers to giving new instructional approaches a chance has been influenced by the degree of choice allowed by the district and support provided by the principal.

The Aurora School District has recently adopted a new reading curriculum that takes an integrated approach to language arts instruction (e.g., using trade books or materials from social studies and science as the content of reading instruction). The district has established a 5-year plan, allowing gradual implementation across grade levels (e.g., pilot testing the first year, voluntary participation the next two years). The district initiative has gotten traditional teachers to cautiously experiment with the new curricula, but the degree of experimentation is strongly influenced by principal support. Teachers who have "bought into" the new curriculum have had to invest a lot of time in the

changeover, and without an advocate for change at the school, some teachers who had experimented with the new curriculum at the beginning of the year had abandoned their attempts by the end of the year.

Lack of funding has hurt the efforts of some districts in our study to provide the necessary support structures for implementing new curricula (e.g., inservice, follow-up, materials). In general, we found that teachers were not satisfied with the support they received from their district. The problem was most pronounced in districts (both large and small) facing financial problems, where cuts have occurred or new curricula are being implemented with little support. Changing instructional practices requires substantial effort from teachers, and given all the additional requirements placed on classroom teachers at a time of shrinking resources, it is not surprising that alternative wisdom instruction is only slowly making an inroad into classrooms.

The Saratoga School district implemented a new math curriculum this year with very little support provided to teachers because the district is facing a large budget deficit. Inservice training was provided to representative teachers at each school, but with no follow up provided. District-level staff expressed concerns about the ability of many of these teachers to assist their colleagues at school because of their lack of understanding of mathematical concepts. Additional technical assistance from the administration though has been minimal due to the layoff of all supervisory staff as a result of budget cutbacks. The cutbacks have begun to take their toll on all staff.

Textbook Adoption

Textbook choices, typically the province of the district office, play a large role in instruction because teachers often rely on textbooks to learn new instructional approaches or because they feel some pressure to conform to district guidelines. For others who held strong views about instruction at odds with the approach presented in the textbook, these teachers tended to find ways to "work around" the textbook curriculum (i.e., ignoring or supplementing the textbook). Despite their influence, the choice of textbooks did little by itself to make up for teachers' lack of experience with the approach contained in a textbook. A veteran teacher trying to implement a new whole language approach to reading instruction clearly illustrates the problems incurred by many teachers trying to implement a new curriculum:

Mrs. Clark relies on the basal reading series and the district test to form her curriculum agenda (unit tests are taken directly from the basals because they best prepare students for the district test). Her conception of reading and language does not extend much beyond the materials around which her curriculum revolves. She adheres to the district's new whole language concept, primarily by following the basal and related activity workbooks which are designed to be a whole language approach. She tries to supplement the basal with potentially innovative lessons and activities, but appears unable to make crucial links among various skills and concepts. Without sophisticated subject-matter knowledge about reading processes, she has been dependent on prepackaged curricula to guide her instruction.

Testing/Accountability Issues

Publications such as "A Nation At Risk" have prompted the public to latch on to a simple figure to assess how schools are doing, which has increased the emphasis on standardized test scores. Hence, outside pressure to raise student achievement levels is highest in schools where students perform least well on standardized tests. These are typically urban schools with the largest concentrations of minority and low-income students (the category of students who traditionally don't do well on standardized tests). The result has been that these schools often simplify their curricula and force teachers to "teach to" the test (Ascher, 1990).

Recent federal and state laws have compounded the problem (e.g., new Chapter 1 program improvement provisions based on student test performance, minimum competency standards established by 47 states). Current discussions regarding national goals and performance standards have drawn additional attention to accountability concerns. The districts and states in our sample were not immune to these pressures. For example, one of the state's requires some use of higher-order thinking skills in its state assessment program as a result of recommendations for a more comprehensive assessment system. But at the same time, they are considering linking average school test scores to the possibility of state intervention and average classroom test scores to possible teacher sanctions.

At the same time that policymakers are willingly considering altering traditional lines of authority and allowing experimentation in schools as part of reform efforts, schools are also under increasing scrutiny to perform

or be accountable (primarily in the form of test scores). Test scores are reported in local papers; principals and superintendents are compensated based on student performance; and, as illustrated above, districts can be subject to state intervention for inadequate student achievement gains. Within this context, it is easy to see how the amount of emphasis placed on test results can have a strong influence over instructional content, usually in favor of basic skills.

The effects of testing pressure were seen most dramatically in one of the six districts in our sample. A feeling of powerlessness often manifests itself in situations where testing pressure is high, and teachers in this district felt they had little control over the content, pacing, and delivery of instruction.

> Testing clearly drives instruction in the Franklin School District. The numerous levels of testing in the district sets the pace of instruction, as well as determining what is to be taught. There are district-made criterion-referenced tests three times a year, yearly standardized testing in the spring, and also state assessments for all students in selected grades (not to mention classroom testing such as unit tests in reading and math). Principals are judged by their school's test performance and in turn, how they judge their teachers. The Superintendent has been credited with "turning the district around" by helping to raise standardized test scores. Taking tests became part of the curriculum under his leadership and consume an inordinate amount of classroom time. Recently, principals' salaries have been tied, in part, to school test scores. The Superintendent keeps them posted on the wall in his office, school by school and principal by principal.

Pressure from testing can come from the school level, as well as the district level. Large amounts of time are often spent at some schools on test preparation. Teachers at two of the schools in our sample suspend regular instruction in the Spring for three to four weeks to drill students on testing by working through the Scoring High test preparation workbooks provided by the publisher. Other schools in the same districts did not seem to perceive as much pressure that their students perform well on standardized tests.

In some instances, teachers felt torn between conflicting goals, e.g., teaching advanced skills in a new curriculum and teaching basic skills stressed by the district test.

While Mr. Hager had reservations about the new district math curriculum that placed a greater emphasis on problem-solving and critical thinking skills, he was putting an effort into its implementation. But, by late February, he had returned to emphasizing computational skills and openly trying to get students prepared for the district test administered in early April. He was assigning some of the problem-solving and critical thinking activities for homework, and only using the math manipulatives for demonstrations. After testing, he was back to experimenting with manipulatives and focusing on conceptual understanding, along with teaching computational skills. He noted to the observer that there had only been one item on the test requiring problem-solving skills. Because of cutbacks in district funding, little monitoring of how the new math curriculum was being implemented in schools was occurring, nor were any follow-up inservices provided during the school year. Without supervision and support, it was very easy for teachers in the district to revert back to what was familiar and brought desired results in the past.

But testing programs do not always have negative consequences on instruction and, in some cases, can move teachers to gear their instruction towards less conventional approaches. Three districts in our sample are in a state that has established a testing program that assesses writing holistically, i.e., through samples of extended test writing. In this state, a matrix sampling technique is used such that students in the same classroom may receive different types of writing prompts. Accordingly, teachers feel the pressure to put a priority on composing extended text.

These examples illustrate that the influence of testing on what is taught in any area of the curriculum is a complex interaction between (1) what the tests cover, (2) how frequently they are administered, (3) the incentives or consequences attached to the test results and to which unit (teacher, school, or district), (4) how closely tests are aligned with what the district or schools sets as curriculum, and (5) and how effectively schools or individuals are able to resist or counteract the inevitable pressures from the testing situation (Knapp et al., 1992). For the public that is dissatisfied with the current performance of schools, test scores are something on which to fasten their dissatisfaction. Until educators develop products that will persuade parents and community leaders that schools are performing as they want them to perform, test scores will continue to dominate issues related to accountability and what is taught in classrooms.

Competing Initiatives Within Districts

Granting authority and flexibility to schools is a complex process that is full of potential pitfalls. Often what occurs are superficial modifications (e.g., limited participation in decisionmaking) that thwart any real change. There may be a lot of lip service regarding change, but often it is more symbolic than any real change. Take, for instance, the move towards teacher empowerment. One of the districts in our study has instituted School Improvement Teams which embody some aspects of school-based management, but teachers can't make any major curricular or instructional decisions. One principal commented: "I don't think the board will give up any power." This principal does not believe parents or the community would support any type of "radical" management changes either. Teacher's instruction therefore follows the district-adopted textbook. The Superintendent relies a good deal on test scores for evaluating progress, and because of the necessity to pass state-mandated tests, teachers feel they can't stray too far afield in experimenting with change. Under these conditions, teacher empowerment is not likely to get past the discussion stage in this district.

The consequences of policies that are not clearly aligned to support or inhibit particular instructional practices are illustrated by another district in our sample:

> Hawkins County provides its teachers mixed signals about what to teach. The district recently adopted a new literary reading series that places less emphasis on discrete skills taught out of context, but testing practices push teachers toward basic skills instruction. The county's rigid adherence to the district curriculum has stifled experimentation with alternative language arts instruction; it is easier to teach "by the book" than to try something new or different. Teachers closely follow the content of the textbook because skills and vocabulary from stories show up on these tests and because the tests follow the instructional approach taken in the textbook. Test results also override teacher judgment since the pacing and content of instruction is directly tied to how well or poorly students perform on unit tests. Teachers don't seek out much coursework that isn't required due to low staff morale. The school environment is highly stressful for teachers, with staff turnover a problem. The strongest teachers are able to find ways to be creative, but the system controls the teaching of the majority of teachers.

Competing initiatives underscore the complexities involved in creating conditions necessary for teachers to adopt alternative instructional approaches. The instructional strategies embodied in teaching for meaning and understanding often require more time to cover a topic as students experiment with concepts or discuss how the lessons learned in a novel relate to their own experiences. But when faced with the pressure of unit tests or a highly structured curriculum to cover a specified set of topics within a short timeframe, some teachers are unable to balance these demands and often give up attempting any new instructional approaches. In one of our districts that has allocated significant blocks of time in each school day to implement a new language arts curriculum, time has been taken away from other subject areas because teachers do not have the training in how to integrate instruction so that no subject is shortchanged. As a result, although students are getting intensive instruction in language arts, it has come at the price of instruction in other subjects such as social studies and science. The actions in these districts and others in our sample suggest that policymakers have to find a balance between pressuring teachers to change their practice and providing sufficient professional autonomy and support to make that change meaningful and appropriate.

The State Context for Instruction

The influence of state policies on instructional practices in our sample of classrooms was more indirect than school and district factors and showed mixed results. There appeared to be a clear association between the state setting and the presence of alternative approaches in mathematics and writing instruction; the association was less obvious for reading instruction. As we have seen in previous research, the degree of influence exerted by a state over instructional practice can be a function of the traditional pattern of interaction between a state and its districts. For example, one of the states in our sample has traditionally not taken an directive approach in providing curriculum guidance to its school districts. As a result, districts in this state have taken the initiative in instructional reform.

Although some researchers have suggested there is little effect of state policies on elementary mathematics instruction (e.g., Guthrie, 1990), our data show that in states without curriculum frameworks and the like that promote new instructional approaches in mathematics, practices in the classroom are more restricted. The role that state policies can play is illustrated by comparing the classrooms in State 1 and 3 (see Table 8). State 1 is nationally known for its aggressive stance in adopting a new elementary mathematics framework strongly linked to the NCTM Standards, and for rejecting textbooks that did not measure up to its new goals. Even though not all classrooms in the sample from State 1 are following the curriculum guidelines, the pattern shows a generally higher proportion in this state. State 3, which has not taken strong measures to change its mathematics curriculum, had more than 4 times as many narrowly focused classrooms (21) compared to classrooms emphasizing variety (5).

Strong links are also apparent to the state context with regard to the patterns of writing instruction. In addition to advocating a new mathematics curriculum, State 1 also advocates an emphasis on extended text writing and reinforces curriculum guidelines with a mandated writing assessment that requires students to write different forms of text. Hence 44% of all classrooms in State 1 studied across both years were classified as offering extensive opportunities for extended text writing, compared to 16% of the classrooms from the other two states with no statewide test. The variation among districts in State 1 again illustrates the role of the district in supporting change.

With reading instruction, the variation across districts appear to cancel each other out in arriving at state averages, primarily due to the efforts of individual districts to revamp their own language arts curriculum across the two years we collected data. In Year 1, several of the districts had just embarked on changing their language arts program, and by Year 2, two of the districts had taken further steps to promote language arts instruction featuring a number of the comprehension-oriented strategies we are studying. Nonetheless, there was qualitative evidence from observational visits that state interest in an integrated language arts approach fostered consideration of change at the local level.

Summary and Conclusions

The alternative instructional approaches represented in our typologies are not linked primarily with higher-achieving children (and hence not appropriate for low-achieving children) or a more affluent student population. They are also not strongly linked to better-prepared teachers or those who are more satisfied with teaching. But particular types of classrooms are associated with particular school settings. We found that state, district, and school factors go a long way toward explaining why certain classroom types are found where they are. Policymakers and those who support instruction should realize how much is required to make alternative instructional practices work, plan support systems accordingly, and carefully consider the implications of policies that impinge on curriculum and instruction.

Adopting alternative instructional practices typically means that teachers must fundamentally rework their conceptions of the subject they are teaching and their approaches to it. Mandating changes without giving teachers considerable professional support and the flexibility to adopt the mandate to their particular circumstances can often be counterproductive. In such instances, many teachers become confused and embark on new approaches without understanding them, resulting in ineffective teaching. Principals can play an important role in encouraging certain instructional practices and providing guidance on how to adapt such practices to the particular circumstances of that school. Just as important, principals can buffer teachers from outside demands and allow them the freedom to experiment with practices that are new to them. Our research makes clear that district and state policymakers' choices about appropriate teaching and learning and how to support these efforts can also affect an individual teacher's actions in the classroom through curriculum guidelines, textbook adoption, and testing. Pressure for improvement from district and state agency officials helped to encourage, sometimes push, teachers to try new ways of teaching mathematics, reading, or writing. Therefore, future policy decisions should be prudently considered.

Careful examination of the ways that elements of the school, district, community, and policy environment do or do not support effective curriculum and instruction can do much to guide future improvement efforts, both by identifying misguided or counterproductive policies and by pointing the way toward more helpful ones (Knapp & Turnbull, 1990). Existing research at the school level provides some understanding of these linkages (e.g., maintaining high expectations for all students, a supportive professional environment, providing adequate resources), but as yet are not well connected to what takes place in the classroom. The Study of Academic Instruction for Disadvantaged Students has extended our knowledge a little further in this direction. There is much still to learn about the application of alternatives to conventional wisdom to the range of settings in which poor children learn. Transcending current conceptions of best practice and understanding more about the environment in which instruction takes place implies much more work by both researchers and practitioners.

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